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Dynamics of Interethnic Contact: A Panel Study of Immigrants in the Netherlands

Borja Martinovic, Frank van Tubergen and Ineke Maas

In contrast to previous research on interethnic contact, which is static in nature, this article provides a dynamic analysis. The aim is to explain individuals' changes in interethnic contact over time by considering relevant time-constant and time-varying characteristics. We investigate the effects of these characteristics measured at time one (t_1) on the change in interethnic contact between t_1 and time two (t_2), thereby providing better estimates of causal relationships. A theory of preferences, opportunities, and third parties is used for identifying potential predictors of interethnic contact. The hypotheses are tested with panel data collected among Turkish, Moroccan, Surinamese, and Antillean immigrants in the Netherlands. The findings show that static research provides good estimates for time-constant characteristics, but it tends to overestimate the role of time-varying characteristics. Moreover, while education, language proficiency, low concentration of immigrants in the neighbourhood, and a native partner clearly lead to the development of more interethnic contact over time, there is indication that these characteristics might just as well be consequences of such contact.

Introduction

Interethnic contact is a well-researched topic in the sociological literature. It is often conceptualized in terms of the number of cross-ethnic friends or acquaintances (Fong and Isajiw, 2000; Emerson *et al.*, 2002; Quillian and Campbell, 2003; Brown, 2006), the frequency (Sigelman *et al.*, 1996; Kao and Joyner, 2004) or the likelihood of cross-ethnic interaction (Hallinan and Williams, 1989), ethnic intermarriage (Hwang *et al.*, 1997; Kalmijn, 1998; Lievens, 1998; Tzeng, 2000; Kulczycki and Lobo, 2002; Joyner and Kao, 2005), or membership in cross-ethnic associations (Fong and Ooka, 2006). Studying interethnic contact is of great importance because such contact can have implications for structural and cultural integration of ethnic minorities. Interaction between ethnic groups can especially be beneficial for the minority group

members in that they can gain access to a wider job market (Lin, 1999), and learn the language of the host country (Chiswick and Miller, 2001). Moreover, contact between ethnic groups can improve intergroup relations, thereby decreasing prejudice and conflict and ensuring a more cohesive society (Allport, 1954).

A drawback of previous research on interethnic contact is its static nature. Existing studies have focused on the associations between the characteristics of ethnic minorities and their level of contact with the dominant group when both the characteristics and the contact were measured at the same time. For example, it was found that minorities who at the time of the survey speak the country's official language better also have more contact with the dominant group (Fong and Isajiw, 2000; Weijters and Scheepers, 2003), and that minorities who live in ethnically mixed neighbourhoods interact more frequently with the dominant

group (Emerson *et al.*, 2002; Gijsberts and Dagevos, 2005) and are more likely to marry someone from that group (Hwang *et al.*, 1997; Lievens, 1998) compared to the ones living in isolated ethnic neighbourhoods. The main disadvantage of such static approach is that the causality of the relationships remains questionable. For instance, while it could be true that minorities who speak the majority's language well develop more contact with the members of the majority, it could also hold that having a lot of contact with them helps minorities learn the language better.

This study will improve upon previous research by treating interethnic contact as a dynamic phenomenon and by relying on panel data for testing the hypotheses. The aim is to explain individual changes in the level of interethnic contact over time, thereby drawing more correct conclusions about causal relationships. For this purpose, the study will specifically focus on interethnic contact in leisure time and not on ethnic intermarriage. While ethnic intermarriage represents the strongest tie between two members of different ethnic groups, it does not tell much about possible changes in contact, since marriage is often a singular and rather stable event in the individual's life course. Moreover, intermarriage is still a rather rare phenomenon for most ethnic groups (Lievens, 1998; Joyner and Kao, 2005). In contrast, interethnic contact in leisure time can change more easily and is applicable to a larger segment of the population.

An objective of this study is to compare our dynamic approach with the one that relies on cross-sectional data. The results of the two analyses will be contrasted in order to check whether previous cross-sectional findings also hold under the improved dynamic framework. When studying interethnic contact by means of cross-sectional data correct causal conclusions can most likely be drawn about the effect of time-constant characteristics, such as ethnicity and gender, because these cannot in turn be affected by contact. However, the causal relationships between time-varying characteristics (e.g. language or education) and interethnic contact are more problematic to estimate with cross-sectional data because it is not clear whether these characteristics lead to later changes in contact or whether they themselves are influenced by contact. Therefore, an analysis of panel data is especially valuable for a better understanding of the direction of causality regarding time-varying attributes.

This study focuses on non-western immigrants in the Netherlands. Panel data from four waves of a large Dutch immigrant survey (SPVA) will be used. They were collected in 1991, 1994, 1998, and 2002 among Turkish, Moroccan, Surinamese, and Antillean

immigrants. Surinamese and Antilleans moved to the Netherlands from former Dutch colonies, while Turks and Moroccans mainly arrived on a guest worker contract. These four ethnic groups constitute the largest section of the non-western immigrant population in the country (Vermeulen and Penninx, 2000). The occurrence of interethnic contact between them and the native population is scarce—for example, about 33 and 44 per cent of Turkish and Moroccan immigrants report not having any contact with Dutch in their free time (Weijters and Scheepers, 2003). The analysis will be restricted to 'first generation immigrants'—the ones who were born outside the Netherlands. Panel data based on immigrants are rare, and especially questions about interethnic contacts are often lacking in longitudinal immigrant surveys, which means that the data at hand provide a valuable opportunity to get better insights into the dynamics of contact between immigrants and natives.

A Theory of Preferences, Opportunities, and Third Parties

In his well-established review of the literature on ethnic intermarriage, Kalmijn (1998) relies on a theory about the role of preferences, opportunities, and third parties. Given that marriage is a form of social contact, and assuming that the underlying mechanism driving all forms of contact is comparable, we extend the arguments about preferences, opportunities, and third parties to the study of interethnic contact at leisure time. These arguments will be used for deriving hypotheses about time-constant and time-varying determinants that could have a long-term effect on the development of interethnic contact.

The argument based on the concept of preference is that people build up their social circle by choosing acquaintances, friends, and partners who are similar to them. Social networks are guided by the principle of homophily, or preference for interaction with similar others (McPherson *et al.*, 2001). Research on ethnic intermarriage has shown that people prefer having partners from the same cultural background, the ones with complementary values and a similar worldview, because such partners can offer more emotional support and understanding (Kalmijn, 1998). In a series of psychological experiments Byrne (1971) demonstrated that cultural similarity is indeed a favourable condition for the development of personal attraction.

Apart from the preference for similar others, the presence of members of preferred ethnic groups plays a crucial role in bringing about interethnic contact (Blau, 1977). This is the domain of opportunities. When there are many natives around, the opportunity to meet them is high. In such a context, immigrants are structurally conditioned to interact with natives, even if they have an intrinsic preference for co-ethnics. Conversely, immigrant communities that comprise more members and are more spatially segregated provide ample opportunity for meeting co-ethnics, thereby decreasing the chance to interact with natives (Blau, 1977). For instance, Mouw and Entwisle (2006) show that children living in racially mixed neighbourhoods tend to develop interracial friendships at school more frequently. Apart from meeting chances, fluency in the language of the native population also opens up opportunities for interethnic contact. Immigrants who master the language can more easily get engaged in contact with natives.

Finally, third parties, such as the family, the immigrant community, or the state, also play a role in the establishment of interethnic contact (Kalmijn, 1998). These are the parties that are not directly involved in interethnic contact in question, but can either encourage or discourage it. For example, research among natives in the Netherlands has revealed that 40 per cent of the respondents would be bothered if their children decided to marry a member of Turkish, Moroccan, or Surinamese minority (Tolsma *et al.*, 2007). Third parties set the norms of behaviour that have an influence on the establishment of interethnic contact (Pettigrew, 1998). If immigrants internalize the norms promoted by third parties, these can convert into their preferences, making immigrants voluntarily opt for co-ethnic friends. Conversely, if the norms are not internalized, they become individuals' constraints because third parties have the power to sanction undesirable behaviour.

Preferences, opportunities, and third parties are not entirely independent forces guiding interethnic contact, but they are interconnected, which makes it often difficult to disentangle them completely. For this reason, the hypotheses about the effect of a number of time-constant and time-varying attributes on interethnic contact will be derived from a combination of arguments about the role of these three forces. In the case of immigrants, time-constant characteristics are those that were fixed prior to migration, such as the level of education completed in the home country or the age at which they migrated. Post-migration characteristics, on the other hand, are the ones that can potentially change during the time spent in the host country; an immigrant can, for instance, learn the

host language with time, obtain additional education in the destination country, or marry a native person.

Hypotheses about Time-constant Characteristics

First, interethnic contact might vary among ethnic groups. Surinamese and Antillean immigrants come from former Dutch colonies where they have been exposed to Dutch culture, while Turks and Moroccans are culturally more distant from the Dutch (Hagendoorn *et al.*, 2003). An example is religion; while Turks and Moroccans are mainly Muslims, Surinamese and Antilleans are often Christians like the Dutch (Van Tubergen, 2007). Due to the greater cultural similarity, it can be assumed that the latter two groups have a stronger preference for interaction with the Dutch. Moreover, the colonial migrants have learnt Dutch in their home countries, which gives them an opportunity to engage in contact with natives. Therefore, it can be expected that:

Hypothesis 1. Immigrants of Surinamese or Antillean origin will develop more interethnic contact over time than Turkish and Moroccan immigrants.

Interethnic contact might also be related to age at the time of migration. Immigrants arriving at a young age are more flexible in adjusting to new social contexts and quicker at learning the second language than older newcomers (Chiswick and Miller, 2001). Thus, they have more opportunity for interethnic interaction. Besides, they get less socialized into their own culture by third parties, such as educational institutions and media, because they leave their home country at an earlier age. Therefore, they internalize less the home country's norms, and are more likely to accept the norms of the receiving society. It is expected that:

Hypothesis 2. Immigrants who enter at a younger age will develop more interethnic contact over time.

Another potentially relevant characteristic is education obtained in the home country. After migration, highly educated immigrants find themselves in situations where they are exposed mainly to Dutch people, be it at university or at work (Kalmijn, 1998). They have more opportunity to establish contact with natives. At the same time, they also more often have a universalistic view on life (Kalmijn, 1998), meaning that they attribute less importance to ethnic group membership. Therefore, they have a weaker preference

for contact with co-ethnics than low-educated people. It is expected that:

Hypothesis 3. Immigrants with higher achieved education in the home country will develop more interethnic contact over time.

Hypotheses about Time-varying Characteristics

Proficiency in the language of the host country is a crucial resource that facilitates interethnic interaction. It gives immigrants the opportunity to engage in contact with natives, and it renders such interaction more appealing to them because it does not involve much effort. In their research about Asian Americans in the United States, Hwang *et al.* (1997) show that there is a positive relationship between language proficiency and ethnic intermarriage. In line with this finding, it is hypothesized that:

Hypothesis 4. Immigrants who are more proficient in Dutch language will develop more interethnic contact over time.

Similar arguments hold for education obtained in the host country. Immigrants who go to school or university in the Netherlands learn in class about Dutch culture, which might make them accept Dutch customs and values, and therefore also prefer interaction with natives. Moreover, they have a greater opportunity to meet Dutch people. This is especially the case in higher levels of education, where immigrants are mainly surrounded by Dutch peers. Research in the Netherlands (Gijsberts and Dagevos, 2005; Van Tubergen and Maas, 2006) and in Germany (Von Below, 2007) has shown that immigrants are more concentrated in lower level educational institutions and are underrepresented at universities, meaning that there is more opportunity for higher educated ones to meet the natives. For these reasons, it is expected that:

Hypothesis 5. Immigrants with a higher level of education obtained in the host country will develop more interethnic contact over time.

The work setting also provides opportunities for meeting native people. For immigrants who are unemployed these opportunities are slim, while employed immigrants have more chance of engaging

in contact with natives, especially if they occupy high-level functions, which is where native employees tend to be concentrated (Kogan, 2006). The following hierarchy is expected:

Hypothesis 6. Immigrants who were always unemployed in the Netherlands will develop least interethnic contact over time, followed by currently unemployed ones, while employed immigrants will develop more interethnic contact, especially when occupying higher level positions.

Ethnicity of the partner can also affect immigrants' interethnic contact. Those with a co-ethnic partner have less opportunity to meet natives compared to the ones who have a native partner. The latter are especially likely to meet other natives because they have access to the 'native' networks of their partners. They might even prefer to get socially integrated into the Dutch society. On the other hand, immigrants with a co-ethnic partner will be mostly surrounded by other co-ethnics. Moreover, third parties, such as the families of the endogamously married partners, might discourage interaction with natives. Research has shown that family tends to oppose intermarriage (Tzeng, 2000). This reasoning might, to a lesser extent, also apply to the choice of friends. It is therefore hypothesized that:

Hypothesis 7. Immigrants who have a Dutch partner will develop more interethnic contact over time compared to immigrants with a co-ethnic partner.

Finally, the relative size of the immigrant community might also play a role. Research on marriage has shown that people are more likely to marry endogamously if they are members of a large or spatially concentrated group (Lieberson and Waters, 1988; Lievens, 1998; Kalmijn and Van Tubergen, 2006). The lower the concentration of immigrants in an area, the more opportunity there is to interact with natives. Another argument is that the immigrant community acts as a powerful third party when its relative size is large. Contact with Dutch people can be discouraged by such a community because it undermines the group's traditional norms. A smaller and more spatially dispersed immigrant community is comparably weaker and less successful in imposing the norms of the country of origin. It is hypothesized that:

Hypothesis 8. Immigrants who live in more concentrated areas will develop less interethnic contact over time.

Data and Methods

The hypotheses will be tested using Dutch survey data 'Social Position and Use of Facilities by Ethnic Minorities' (SPVA). The SPVA is a large cross-sectional survey of four major non-western immigrant groups in the Netherlands: Turks, Moroccans, Surinamese, and Antilleans. It was conducted in 1988, 1991, 1994, 1998, and 2002 (Veenman, 1988; Martens and Veenman, 1991, 1994; Martens and Tesser, 1998; De Koning and Gijsberts, 2002), and it contains a substantial number of respondents who participated in more than one wave. Starting from 1991, the respondents were asked whether they would be willing to take part in the sequel. Those who answered affirmatively were approached again at the time of the following survey. These respondents can be used in a longitudinal analysis of interethnic contact. Only in the last three waves there is a variable that indicates participation in earlier waves, thereby identifying panel respondents, which is why the analysis will be limited to the surveys that were conducted in the period between 1991 and 2002.

The data were collected using a stratified random sampling method in order to target municipalities with a substantial percentage of immigrants. Seventeen Dutch towns were chosen in which the immigrant population was most highly concentrated at the time of the survey. These comprised the largest Dutch cities—Amsterdam, Rotterdam, Den Haag, Utrecht, and Eindhoven and several additional municipalities. Since at the time of the surveys 40 or more per cent of Turks, Moroccans, Antilleans, and Surinamese lived in these towns, a large enough random sample of members of each ethnic group could easily be obtained (Veenman, 1988; Martens and Veenman, 1991, 1994; Martens and Tesser, 1998; De Koning and Gijsberts, 2002). The drawback of the stratified random sampling method is that it is not entirely representative of the total immigrant population in the Netherlands. Respondents from areas with a low concentration of immigrants are left out, which could possibly lead to an underestimation of the absolute level of interethnic contact.

The respondents were interviewed personally by bilingual interviewers. Heads of the households were approached first, and afterwards other members of the household were interviewed. The focus of this study is on the heads of the households because they received a broader version of the questionnaire which included questions about interethnic contact. However, the supplementary questionnaires completed by other household members are also employed in order to

obtain information about the ethnicity of the respondent's partner and the number of children in the household. It is important to mention that in the pooled panel only 15 per cent of Turkish and 13 per cent of Moroccan households are led by a woman, as opposed to 52 and 53 per cent of Surinamese and Antillean households. Since these Turkish and Moroccan female heads are a selected group (widows or uncommonly emancipated women) and thereby not representative of the Turkish and Moroccan female population in the Netherlands, no inferences will be made about gender.

A total of 1,632 immigrants participated more than once in the survey. While most of the panel respondents ($N=1,398$) took part only in two consecutive years (1991–1994, 1994–1998, and 1998–2002), a smaller number of those reappeared also in later surveys: 206 respondents were present in three waves and 28 in all four waves. Those who participated three times in the panel appear twice in the pooled data: for example, the respondents who were present in 1991–1994–1998 are registered both as belonging to the 1991–1994 and 1994–1998 panel groups. By combining information about all these panel respondents, a pooled data set is obtained, consisting of 1,894 cases, with responses recorded on two occasions that are separated by a time distance of 3–4 years. The majority of immigrants in the SPVA were not interviewed immediately after their arrival in the Netherlands. Instead, they had already been living in the country for various years. This means that the first measurement time (t_1) usually does not represent the moment of entry to the country.

It should be noted that the level of attrition in the SPVA panel is rather high. Given that the survey has not been originally set up as a panel, little effort has been put into re-interviewing previous respondents. While, depending on the wave, 78–83 per cent of the participating immigrants agreed to take part in the sequel, only 17–25 per cent of these were actually re-interviewed. In order to check whether panel participants are a selected group, we will first compare the descriptive statistics of the total sample and the panel. In the subsequent analyses, we will further control for potential selectivity by applying the commonly used Heckman procedure (Heckman, 1979). The most obvious explanation for high attrition in SPVA is that the interviewers did not trace the respondents who moved in the period between two surveys. Immigrants in the Netherlands, and especially those living in large urban areas, tend to change housing frequently: in 2002, between 14 per cent and 26 per cent of Moroccans, Turks, Surinamese, and Antilleans moved,

while this held for only 12 per cent of the natives (Bolt *et al.*, 2006). Indeed, 29–34 per cent of the SPVA respondents who agreed to participate in the follow-up study also acknowledged that they were actually looking for a new apartment. We will use this information about housing, together with several other variables, for predicting participation in the panel.

Dependent Variable *Interethnic Contact*

Interethnic contact is measured by taking a sum score of answers on three questions: ‘Do you have contact with Dutch people in associations?’ (0 = no, 1 = yes), ‘Do Dutch people come over for a visit?’ (0 = no, 1 = yes), and ‘Are you predominantly in contact with the Dutch in your free time?’ (0 = no, 1 = yes). A single 4-point scale for interethnic contact was computed from these three questions. 24 per cent of the respondents scored 0; 31 per cent scored 1; 35 per cent scored 2; and 10 per cent scored 3. A higher value stands for more contact with natives.

Time-constant Predictors

Ethnicity is a categorical variable with four categories: Turkish, Moroccan, Surinamese, and Antillean. *Age at migration* is a continuous variable measured in years. *Education completed in the country of origin* is coded in four categories: none, primary, secondary, and tertiary.

Time-varying Predictors

Language proficiency is measured in terms of Dutch-speaking skills. Answers were recoded into ‘0 = experience speaking problems’ and ‘1 = never experience speaking problems’. *Education completed in the host country* consists of four categories: none, primary, secondary, and tertiary. *Occupational status* was computed by using three questions. These refer to the respondent’s employment history in the Netherlands, current employment status, and the level of the current function (elementary, low, middle, high, and scientific). Categories ‘high’ and ‘scientific’ contain a small number of respondents and were therefore collapsed into one category—high function. Similarly, elementary and low functions were taken together under the label ‘low function’ because the difference between them was considered theoretically too subtle. The resulting variable for occupational status includes the following categories: always unemployed, currently unemployed, employed in a low function, employed in a middle function, and employed in a high function. An additional determinant is the *percentage of non-western immigrants* in the

respondent’s neighbourhood. In the Netherlands, neighbourhoods are marked by a 4-digit postal code. The Central Office for Statistics provides information about the percentage of immigrants per postal code (CBS, 2006). We use figures from 1998. Finally, the variable *partner* consists of three categories: Dutch, co-ethnic, and other (the latter includes respondents with no partner or with a partner from another immigrant group).

By labelling these predictors as ‘time-varying’, we do not want to imply that difference scores between time two (t_2) and time one (t_1) will be used to estimate the effect of the change in these variables on the change in interethnic contact. This label has been given only to emphasize that these variables might change during the time spent in the host country, and that therefore the conclusions from cross-sectional research about the causal relationships regarding these variables might be debatable.

In our analysis, we control for *children in the household* (no children, one child, two or more children) because research has shown that in households with many children parents have less time for social interaction (Kalmijn and Bernasco, 2001). *Gender* (0 = male, 1 = female), *migration motive* (study, work, family, and other), *length of stay in the host country* (measured in years), and the *year of the survey* are also included as controls.

All the measures are summarized in Table 1, along with the descriptive statistics for the cross-sectional and the panel sample. Looking at the means and the SDs, the two samples are highly comparable. The respondents in the panel are presumably not a selected group, as far as the measured characteristics are concerned.

Results

A descriptive analysis is conducted to examine how many respondents have contact with natives and for how many such contacts increase, decrease, or stagnate between two measurement occasions. Given that the sample in the panel is small, the aim of the descriptive analysis is not to give a representative picture of interethnic contact in the Netherlands but to show that contact can change over time.

Both at the first and the second time of measurement, approximately 70 per cent of the respondents are being visited by Dutch people, 46 per cent have predominantly contact with the Dutch in free time, and 15 per cent have contact with them in associations. Looking at the total scores for separate ethnic

Table 1 Descriptive statistics of the variables: range, mean/proportion, and SD ($N = 12,848$ in the cross-sectional data and 1,789 in the panel data)

	Cross-sectional data			Panel data		
	Range	Mean/Prop	SD	Range	Mean/Prop	SD
Dependent variable						
Interethnic contact at t_1	0–3	1.23	0.96	NA	NA	NA
Interethnic contact at t_2	NA	NA	NA	0–3	1.30	0.96
Time-constant factors						
Ethnicity						
Turkish	0/1	0.28		0/1	0.29	
Moroccan	0/1	0.26		0/1	0.21	
Surinamese	0/1	0.27		0/1	0.30	
Antillean	0/1	0.19		0/1	0.20	
Age at migration	0–78	22.13	10.46	0–78	22.67	9.85
Education in the home country						
None	0/1	0.34		0/1	0.30	
Primary education	0/1	0.34		0/1	0.36	
Secondary education	0/1	0.29		0/1	0.30	
Tertiary education	0/1	0.03		0/1	0.04	
Time-varying factors						
Interethnic contact at t_1	NA	NA	NA	0–3	1.30	0.95
Language proficiency	0/1	0.50		0/1	0.50	
Education in the host country						
None	0/1	0.62		0/1	0.64	
Primary education	0/1	0.10		0/1	0.11	
Secondary education	0/1	0.20		0/1	0.19	
Tertiary education	0/1	0.08		0/1	0.06	
Occupational status						
Always unemployed	0/1	0.14		0/1	0.11	
Currently unemployed	0/1	0.35		0/1	0.38	
Employed low function	0/1	0.31		0/1	0.31	
Employed middle function	0/1	0.13		0/1	0.13	
Employed high function	0/1	0.07		0/1	0.07	
Ethnicity of the partner						
Co-ethnic partner	0/1	0.46		0/1	0.54	
Dutch partner	0/1	0.08		0/1	0.10	
Other	0/1	0.46		0/1	0.36	
Percentage of non-western immigrants	0–79.94	32.70	21.02	1.51–79.94	31.20	20.27
Control factors						
Length of stay in the host country	0–71	18.05	9.50	0–66	18.25	8.79
Women	0/1	0.33		0/1	0.31	
Migration motive						
Study	0/1	0.14		0/1	0.14	
Work	0/1	0.29		0/1	0.34	
Family	0/1	0.39		0/1	0.35	
Other	0/1	0.18		0/1	0.17	
Children in the household						
None	0/1	0.42		0/1	0.39	
One child	0/1	0.19		0/1	0.19	
More than one child	0/1	0.39		0/1	0.42	
Year of survey						
1991	0/1	0.19		0/1	0.27	
1994	0/1	0.19		0/1	0.31	
1998	0/1	0.37		0/1	0.42	
2002	0/1	0.25		NA	NA	

Table 2 Percentage of respondents for whom contact increases, stagnates, and decreases between t_1 and t_2 ; differentiation by length of stay

	Length of stay in the host country (in years)						Total
	<5	5–10	10–15	15–20	20–25	>25	
Increase in contact	32.7	27.4	23.3	24.9	24.9	25.8	25.8
Stagnation	42.5	48.3	47.4	48.0	51.2	52.9	49.2
Decrease in contact	24.8	24.3	29.3	27.1	23.9	21.3	25.0

groups, compared to Turks and Moroccans, a larger proportion of Surinamese and Antilleans report having contact with Dutch (32 per cent versus 57 per cent). Furthermore, ethnic group scores on each of the three questions at t_1 and t_2 are highly comparable. This indicates that there are no observable aggregate changes in interethnic contact per ethnic group. However, individuals could still experience an increase or a decrease in interethnic contact over time.

Table 2 gives an indication of how interethnic contact changes for individuals between two surveys, depending on their length of stay in the Netherlands. Overall, for 26 per cent of the respondents contact increases between t_1 and t_2 , for 49 per cent it stagnates, and for 25 per cent it decreases. This means that about half of the respondents report a change in interethnic contact over time, which is a substantial proportion. Looking at the length of stay, recent immigrants more frequently experience a change in interethnic contact than the long-established ones. Moreover, those who have been living in the Netherlands for <10 years more often report an increase than a decrease, while the opposite holds for the ones whose length of stay is between 10 years and 20 years.

Cross-sectional Findings

Using a pooled cross-sectional data set with 12,848 respondents, we first perform a static analysis. The dependent variable is interethnic contact at t_1 , while all the characteristics measured at t_1 are entered as independent variables. The model is assessed with multilevel analysis in SPSS. Such analysis gives estimates of fixed (between-subject) effects, as well as of random (within-subject) effects. Since some respondents were interviewed on more occasions, they are also more times present in the pooled data sets. This means that observations are nested within individuals. In order to control for the nested structure of the data a random factor has to be included in the design.

Model 1 in Table 3 shows that in the cross-sectional analysis all the characteristics are significantly associated with interethnic contact and the relationships go in the expected direction. Surinamese and Antilleans have more contact than Turks. This also holds for Moroccans, but the difference is much smaller. Educated immigrants, those who are proficient in Dutch language and employed in higher functions also have more interethnic contact, as well as those with a native partner compared to a co-ethnic one. Immigrants who arrived at an older age and those who live in neighbourhoods with a high percentage of non-western foreigners tend to have less interethnic contact. These findings resemble observations from earlier studies (Sigelman *et al.*, 1996; Hwang *et al.*, 1997; Lievens, 1998; Fong and Isajiw, 2000; Emerson *et al.*, 2002; Kulczycki and Lobo, 2002; Quillian and Campbell, 2003; Weijters and Scheepers, 2003; Kao and Joyner, 2004; Gijsberts and Dagevos, 2005; Kalmijn and Van Tubergen, 2006).

The next step is to check whether similar relationships are found for the selected group of respondents who participated in the panel (Model 2, Table 3). If an effect is present in Model 1 but absent in Model 2, the difference in the result is to be attributed to the smaller number of respondents in the panel or the selectivity of the sample. To exclude the latter option, we ran a probit regression analysis which predicts participation in the panel and computes a selectivity coefficient for each respondent (Heckman, 1979; Smits, 2003). This coefficient can then later be added to the substantial analysis of interethnic contact as a control variable.

All the independent variables used in the substantial analysis of interethnic contact are included as predictors of participation, together with three additional predictors that theoretically seem to be related to participation: intention to change housing, intention to re-migrate, and taking care of family in the home country. These three variables identify respondents who might move within the Netherlands or return to their home countries, and therefore not participate in the next wave. The results indicate that Moroccans,

always unemployed immigrants, and immigrants who are looking for a new apartment are less likely to participate in the panel. Especially, the latter effect is strong ($B = -0.68$, $P < 0.001$). Re-migration intentions are not associated with participation, while taking care of family in the home country, contrary to the expectations, increases the odds of participating.¹

Controlling for the selectivity coefficient obtained from the analysis of participation in the panel, Model 2 yields estimates that are comparable to those from Model 1. Moreover, the selectivity coefficient is not associated with the dependent variable. This means that selectivity hardly affects the relationships between the dependent and independent variables. Only in the case of education in the host country and occupational status we suspect that it might play a role. Especially primary education has a much stronger effect in the model with panel respondents, and the effect of occupational status almost completely disappears. Only immigrants employed in low-function jobs have significantly more interethnic contact than currently unemployed immigrants. Nonetheless, the coefficients for education categories and most of the occupational status categories follow a similar increasing pattern as in Model 1, suggesting that selectivity is probably not seriously affecting our results. It should be noted that, overall, the relationships in Model 2 are less significant, which is due to an increase in standard error because of a smaller sample size.

Longitudinal Findings

In order to explain changes in interethnic contact over time, longitudinal analysis was conducted with interethnic contact at t_2 as the dependent variable, and all the characteristics at t_1 as predictors (Model 3 in Table 3). The analysis was then repeated with a control for contact at t_1 (Model 4). This last model represents the actual test of our dynamic hypotheses. These models are also assessed with multilevel analyses. While in the cross-sectional analyses *observations* are nested within individuals, in the longitudinal analyses the lower unit is *observation periods*. An individual who was interviewed in 1991, 1994, and 1998 is twice present in the pooled longitudinal data set: once for 1991–1994 and once for 1994–1998 period. In this case, two observation periods are nested within the respondent. We again control for the fact that not every case in the longitudinal data set represents a different individual.

Model 3 estimates the effect of predictors on the *actual level* of later contact, while Model 4 controls for previous contact and estimates the effect of predictors

on the *change* in contact between t_1 and t_2 . First, we will interpret the results from Model 4, thereby testing our dynamic hypotheses.² Then the differences between the cross-sectional model with panel respondents (Model 2) and the longitudinal model (Model 4) will be discussed for each characteristic. In order to understand these differences, the ‘intermediary’ analysis (Model 3) will be consulted.

Model 4 shows that contact at t_1 is an important predictor of later contact. This is not surprising: contact that was built up once is unlikely to be completely lost afterwards. A number of predictors are significant when controlling for contact at t_1 . This is a relevant finding because it means that these characteristics have an effect on interethnic contact over and above previous contact. Their effect, therefore, has to be interpreted as an effect on the change in contact between the first and the second measurement.

It was expected that immigrants of Surinamese and Antillean origin would develop more interethnic contact over time than Turkish and Moroccan immigrants (Hypothesis 1). This hypothesis is confirmed. Compared to Turks, both Surinamese and Antilleans develop more contact with the Dutch over time. Especially for Antilleans, the effect is substantial: their change in interethnic contact is 0.28 units higher than for Turks, and on a 4-point scale this is a considerable difference. Moroccans, on the other hand, do not differ from Turks.

Furthermore, it was expected that immigrants who entered at a younger age would develop more interethnic contact over time (Hypothesis 2). The results of the longitudinal analysis do not support this hypothesis; age at migration does not have a significant effect.

Subsequently, it was hypothesized that immigrants with a higher achieved education in the home country would develop more interethnic contact over time (Hypothesis 3). This hypothesis is confirmed. The coefficients for primary, secondary, and tertiary education are positive and increasingly larger the higher the level. However, the difference is only significant for secondary and tertiary education. Having a high school or a university degree compared to no education respectively leads to a 0.16 and 0.22 unit increase in later interethnic contact.

As to the time-varying predictors, immigrants who speak better Dutch were expected to develop more interethnic contact over time (Hypothesis 4). This hypothesis is confirmed. The change in interethnic contact between t_1 and t_2 is 0.12 units greater for immigrants who say they never experience problems

Table 3 Cross-sectional models of interethnic contact with all respondents (model 1) and panel respondents (model 2) and longitudinal models without and with a control for previous contact (models 3 and 4); a multilevel analysis

	Model 1		Model 2		Model 3		Model 4	
	Cross-sectional	SE	Cross-sectional	SE	Longitudinal	SE	Longitudinal	SE
	B		B		B		B	
Intercept	1.044***	0.050	1.040***	0.234	0.824***	0.229	0.575**	0.232
Time-constant factors								
Ethnicity (ref. Turkish)								
Moroccan	0.048*	0.022	0.030	0.062	-0.009	0.062	-0.000	0.058
Surinamese	0.146***	0.027	0.169*	0.073	0.213**	0.073	0.154*	0.068
Antillean	0.317***	0.030	0.381***	0.080	0.405***	0.080	0.277***	0.074
Age at migration	-0.005***	0.001	-0.004	0.003	-0.005	0.003	-0.004	0.003
Education home country (ref. none)								
Primary education	0.066***	0.019	-0.026	0.050	0.048	0.050	0.037	0.047
Secondary education	0.170***	0.022	0.187**	0.059	0.232***	0.058	0.164**	0.055
Tertiary education	0.287***	0.045	0.193	0.122	0.274*	0.121	0.223*	0.115
Time-varying factors								
Interethnic contact at t ₁	-	-	-	-	-	-	0.327***	0.022
Language proficiency	0.273***	0.019	0.233***	0.051	0.181***	0.051	0.126**	0.048
Education host country (ref. none)								
Primary education	0.050*	0.028	0.200**	0.068	0.114*	0.067	0.066	0.065
Secondary education	0.149***	0.024	0.218***	0.064	0.208***	0.064	0.138*	0.060
Tertiary education	0.280***	0.036	0.343***	0.103	0.275**	0.103	0.179*	0.098
Occupational status (ref. now unemployed)								
Always unemployed	-0.095***	0.026	-0.058	0.075	-0.031	0.074	0.038	0.070
Employed low function	0.064***	0.019	0.082*	0.050	0.100*	0.049	0.055	0.047
Employed middle function	0.163***	0.026	0.079	0.068	0.127*	0.067	0.089	0.064
Employed high function	0.221***	0.036	0.131	0.096	0.152	0.096	0.072	0.090

Ethnicity of the partner (ref. co-ethnic)									
Dutch partner	0.460***	0.031	0.488***	0.076	0.481***	0.075	0.351***	0.071	
Other	0.102***	0.019	0.114*	0.057	0.072	0.057	0.041	0.054	
Percentage of non-western immigrants	-0.008***	0.000	-0.007***	0.001	-0.008***	0.001	-0.006***	0.001	
Control factors									
Length of stay in the host country	0.008***	0.001	0.009**	0.003	0.010**	0.003	0.006*	0.003	
Women	-0.031	0.020	-0.044	0.060	-0.011	0.060	-0.004	0.056	
Children in the household (ref. none)									
One child	-0.066**	0.021	0.088	0.056	0.020	0.056	-0.046	0.053	
More than one child	-0.059**	0.019	-0.067	0.052	-0.134**	0.051	-0.117*	0.049	
Migration motive (ref. study)									
Work	-0.007	0.031	0.060	0.080	-0.117	0.080	0.122	0.075	
Family	0.091**	0.027	0.124	0.071	0.159*	0.071	0.108	0.067	
Other	0.087**	0.029	0.125	0.075	0.202**	0.075	0.188**	0.071	
Year of survey (ref. 1991)									
1994	-0.063*	0.026	-0.126*	0.054	0.007	0.053	0.025	0.054	
1998	-0.207***	0.022	-0.166**	0.053	0.100	0.052	0.151*	0.051	
2002	-0.151***	0.026	-	-	-	-	-	-	
Selectivity coefficient	-	-	-0.060	0.113	-0.023	0.110	-0.003	0.115	
Model fit									
Variance (observation/observation period)	0.490***		0.592***		0.541***		0.758***		
Variance (respondent)	0.189***		0.206***		0.236***		0.000		
N	12,848		1,815		1,813		1,789		

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$ (one-sided tests are reported for the predictors and two-sided for the control variables).

Note: Interethnic contact at t_1 is treated as the dependent variable in Models 1 and 2, and interethnic contact at t_2 in Models 3 and 4.

speaking Dutch than for those who experience such problems.

The next hypothesis predicted that immigrants with a higher level of education obtained in the host country would develop more interethnic contact over time (Hypothesis 5). The findings are in line with the hypothesis. Just as in the case of education in the home country, the coefficients for primary, secondary, and tertiary education are positive and increasingly larger the higher the level, and the effect is statistically significant when it comes to secondary and tertiary education. Compared to no education in the host country, having a high school and a university diploma leads to a 0.14 and 0.18 units increase in interethnic contact, respectively.

Moving on to the occupational status, a hierarchy was expected, with immigrants who were always unemployed developing least, and immigrants currently employed in high functions developing most interethnic contact over time (Hypothesis 6). The results show that occupational status does not predict a change in interethnic contact over time. Hypothesis 6 is rejected.

Furthermore, it was hypothesized that immigrants with a Dutch partner would develop more interethnic contact over time compared to immigrants with a co-ethnic partner (Hypothesis 7). This hypothesis is supported. For immigrants with a native partner, the change in interethnic contact between t_1 and t_2 is 0.35 units higher than for immigrants with a co-ethnic partner.

Finally, it was expected that immigrants who lived in more concentrated areas would develop less interethnic contact over time (Hypothesis 8). The results support this prediction. A 1 SD increase in the percentage of non-western immigrants in the neighbourhood leads to a 0.12 units increase in later interethnic contact.

Comparison of Cross-sectional and Longitudinal Findings

The next step is to compare the cross-sectional model with panel respondents (Model 2) with the longitudinal model (Model 4). Concerning time-constant characteristics, there are no large differences between the longitudinal and the cross-sectional model. We find similar effects for ethnicity, age at migration, and education in the home country. Only in the case of Antilleans, the effect is noticeably smaller in Model 4 (a reduction of 28 per cent), meaning that it is partially mediated by earlier contact. Antilleans have more interethnic contact than Turks at t_1 , and the gap between the two groups increases somewhat less over

time than that one would conclude without controlling for previous contact. For tertiary education in the home country the opposite holds. The effect is marginally non-significant in the cross-sectional model and becomes significant in the longitudinal model, implying that, with respect to interethnic contact, at t_1 highly educated people do not differ strongly from people without any education. However, the gap between these two groups increases during the time spent in the host country. Age at migration is not related to interethnic contact in Models 2 and 4, but the coefficients are comparable, meaning that the role of age at migration can be estimated well with a static model. The effect actually seems to be robust across all four models; only the standard error in the analyses with panel respondents is larger than in the original cross-sectional model due to a smaller N , which is why the effect already becomes non-significant in Model 2. For this reason, the hypothesis about age at migration should not be too strongly rejected.

As to the time-varying determinants, with our dynamic analysis we replicate the effects of language proficiency, education in the host country, native partner, and percentage of non-western immigrants in the neighbourhood. However, most of these effects are substantially smaller in Model 4, meaning that the differences between the cross-sectional and longitudinal analysis are more considerable with regards to time-varying characteristics. This is especially the case when it comes to education in the host country and language proficiency: the coefficients in Model 4 for primary, secondary, and tertiary education are reduced by 67 per cent, 37 per cent, and 48 per cent, respectively, while the effect of language proficiency is 46 per cent weaker. For native partner and percentage of immigrants the difference is smaller: 28 and 16 per cent.

Part of the reduction already takes place when the step is made from Model 2 to 3. This holds only for education and language proficiency. In Model 2, both the predictors and the dependent variable are measured at the same time, so it is not possible to determine the direction of causality. In Model 3, there is a time lag between the predictors and interethnic contact, which partially solves the issue of causality. Thus, part of the effect of language and education on interethnic contact found in Model 2 could be due to the fact that interethnic contact also has an effect on these two characteristics. Another explanation is that in Model 3 there is simply a greater time distance between the measurements, which is why the associations become weaker.

The remaining reduction in the effects can be attributed to the fact that we are controlling for earlier interethnic contact, thereby obtaining even more precise estimates of causal relationships (the coefficients for all four characteristics are smaller in Model 4 compared to Model 3). This can again have two meanings: either education, language proficiency, native partner, and low percentage of immigrants in the neighbourhood have already had an influence on the earlier interethnic contact, which then affects later contact as well (the mediation effect), or the causality is at the same time working the other way around: contact at time zero might have led to an improved language proficiency at t_1 and an increased chance that an immigrant will enrol in school, marry a native or live in a less ethnically segregated area. These characteristics are then in turn affecting later contact, as seen in Model 4.

As to the occupational status, the weak significant relationship found in Model 2 is not replicated by Model 4. Differences between Models 3 and 4 suggest that mediation or reversed causality is taking place. However, due to the fact that our panel sample shows some indication of selectivity with respect to occupational status (the effects in Models 1 and 2 are not very comparable), we are unfortunately unable to draw any firm conclusions about the role of occupational status. Our findings should be taken with reservation.

Discussion

The main contribution of this article is that it gave a twist to the study of interethnic contact by examining it from a dynamic perspective. Using the arguments from the theory of preferences, opportunities, and third parties, that has proven to be successful in earlier empirical research on ethnic intermarriage, hypotheses were derived about the characteristics of immigrants that could explain later changes in their level of interethnic contact in leisure time. By framing the question in a dynamic way and using longitudinal data to test the hypotheses, the causality of the relationships could be determined with more certainty. Moreover, on the basis of the results from the dynamic analysis, it was possible to re-evaluate the conclusions drawn from previous static research on interethnic contact. Although our panel sample is characterized by a high attrition rate, after performing Heckman analysis and thus controlling for potential selectivity, we are confident about the validity of our findings.

By adopting a longitudinal design, we replicated the effects of ethnicity, education, language proficiency,

native partner, and the percentage of immigrants in the neighbourhood that have been identified in previous research using cross-sectional data (see for example, Hwang *et al.*, 1997; Lievens, 1998; Fong and Isajiw, 2000; Kulczycki & Lobo, 2002; Kalmijn and Van Tubergen, 2006). However, by making a clear distinction between time-constant (pre-migration) and time-varying (post-migration) characteristics, the analysis presented in this article demonstrated that cross-sectional studies are overall much better at estimating the effects of the former on interethnic contact. This is not surprising given that for time-constant characteristics causality simply cannot run in the reverse direction. This article shows that when we adopt a dynamic, as opposed to static approach, indeed the same conclusions can be drawn about the effects of ethnicity, education obtained in the home country, and age at migration. For Surinamese and Antillean immigrants, interethnic contact increases more over time than for Turks and Moroccans. This is most likely because they come from previous Dutch colonies where they have been exposed to Dutch culture, so they have a stronger preference to interact with the Dutch. Similarly, immigrants with a higher level of education obtained in the home country develop more contact with natives over time, probably because they have a universalistic view on life and therefore attribute less importance to ethnic group membership. Age at migration negatively affects interethnic contact, although the coefficients are not significant in any of the models with panel respondents. Overall, analogous conclusions can be drawn from the cross-sectional and longitudinal models with panel respondents regarding time-constant characteristics.

On the other hand, the causality in the relationships between interethnic contact and time-varying characteristics is more difficult to estimate with cross-sectional data. Using panel data, we corroborate some of the conclusions from previous static studies on interethnic contact. Having a native partner, living in an area with few immigrants, speaking the language of the host country and having completed education in the host country are all attributes that lead to the development of more interethnic contact over time. Having a native partner gives immigrants access to the social network of their partner, which consists mainly of native friends and family. These, as third parties, encourage the immigrant's further interaction with natives. Similarly, living in a non-immigrant neighbourhood, speaking the language or attending school in the host country provides immigrants with a greater opportunity to establish interaction with the natives.

However, our study argues that the strength of time-varying determinants has been overestimated in cross-sectional research, and that some of the associations that were found in earlier studies might also involve reversed causality. While education, language proficiency, native partner, and the percentage of immigrants in the neighbourhood all cause a change in interethnic contact over time, they might also be influenced by interethnic contact. For instance, immigrants who speak the language of the host society better and are enrolled in high school or university have a better opportunity to engage in interaction with the natives, and probably also a stronger preference for such interaction compared to immigrants who do not master the language and are not being educated in the host country. At the same time, it is the contact with natives that might result in even more advanced language skills and a higher incentive to get better educated.

In conclusion, by adopting a longitudinal design, this study has confirmed some of the findings from previous static research on interethnic contact, but it has also questioned several propositions. The effects of time-varying predictors have been frequently overestimated in cross-sectional research, which is why these characteristics are now suspected to be consequences of such contact as well. In the introduction, it was argued that interethnic contact is an important phenomenon because it promotes other forms of integration, such as cultural and structural ones. The findings from this study confirm this assumption: there is an indication that interethnic contact might lead to the development of language skills or that it might help immigrants find a native partner, which are all aspects of cultural integration. Likewise, contact with natives seems to help immigrants obtain a higher level of education, which is an aspect of structural integration. Future research should be directed towards investigating these reversed relationships in order to provide a more comprehensive overview of the dynamics of interethnic contact.

Notes

1. More detailed results of Heckman analysis are available from the authors on request.
2. Due to missing values, the number of cases in the longitudinal analysis dropped from 1,894 to 1,789. Postal code, education home/host, and length of stay have the highest proportion of missing values (about 3 per cent each), followed by social contact and language (about 1.5 per cent).

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